taking a vote a large majority decided that some resolution should be framed. Not the least important feature of the meeting were the speeches made by Sir Frederick Young (formerly chairman of the "Forest Fund"), and others who had taken up an antagonistic attitude in the correspondence. Having visited the place and heard the explanations given on the ground, these gentlemen admitted that as the result of the afternoon's inspection they had seen good reason for modifying their views, and they finally voted for the following resolution, moved by Prof. Boulger and seconded by the Rev. W. C. Howell, of Tottenham:—"That in the opinion of this meeting the general action of the Conservators in the recent thinnings has been judicious." Forty-one voted in favour of this resolution, and eight against. The views of those whose opinions should count for much in reassuring the public that no alarm need be felt as to the future of the Forest, have thus been expressed in very decided terms.

THE UNIVERSITY OF LONDON.

A GENERAL meeting of the Association for Promoting a Professorial University for London, was held in the rooms of the Chemical Society, Burlington House, on Saturday, April 28; the Right Hon. T. H. Huxley was in the chair.

The committee reported that having carefully studied the report of the Gresham Commission, they considered it is generally in accord with the principles of the Association.

In accordance with this report a resolution, moved by Prof. Rücker, and seconded by Prof. Ramsay, was unanimously carried, expressing general approval of the scheme. The committee were also empowered to draw up a memorial to the Government, to be signed by members of the Association, and others who may agree with it, urging the Government to appoint a Statutory Commission to establish a Teaching University in London on the basis of the scheme of the Royal Commission.

This action on the part of the Association is, we hope, another step towards the realisation of the scheme of the "Gresham Commission."

It was at one time to be feared that it would be impossible to reconcile the various divergent views which had been expressed as to the best constitution for the University. Now, however, that the Colleges of Physicians and Surgeons, the Governing Body and Senate of University College, and the Professorial Association, have all expressed a general approval of the scheme, while the London County Council finds in it nothing inconsistent with its own views, it is evident that the Commissioners have achieved a remarkable success. The University of London has not yet spoken, but the opponents of the scheme in Convocation were unable to carry their resolutions, and it is to be hoped that the University may yet be saved from the discredit of blocking the way.

NOTES.

A STATUE of Durand-Claye, the pioneer of the system for the agricultural utilisation of sewage, was unveiled at Gennevilliers, on Friday last. The funds for the erection of this monument were raised by international subscription, in accordance with a proposal made at the Congress of Hygiene held in Paris in 1889.

WE regret to announce the death, at Geneva, of the eminent chemist, J. C. Galissard de Marignac. We have also to record the death of Laureano Calderon, Professor of Biological Chemistry in Madrid University.

THE Kazan Society of Naturalists will celebrate the twenty-fifth anniversary of its foundation on May 25, by a general meeting of members, at which a statement will be read of the works published by the Society during its existence.

THE *Times* says that the Attorney-General has given his sanction to the sum of £25,000, the residue of the legacy of the late Mr. Richard Berridge, being given, in trust, to the British Institute of Preventive Medicine, for the endowment of a laboratory devoted to the bacteriological and chemical examination of the water supply, with special reference to the best means of preventing the conveyance of disease through water. A large laboratory is now in course of erection for the purpose on the site secured by the institute at Chelsea.

EARTHQUAKES continue to be felt in Greece. A severe disturbance, having its centre in Atalanti, occurred on Friday, April 27 (see p. 7), and the *Times* correspondent says that the inroads of the sea in this district have extended inland for a distance of three kilometres. The surface of the sea in many places is coloured with the products of submarine eruptions. A chasm has opened in the ground not far from Atalanti, and extends in a south-westerly direction for about twelve kilometres.

AT the anniversary meeting of the Zoological Society, held on Monday, Sir William H. Flower, K.C.B., F.R.S., was re-elected President, Mr. C. Drummond, Treasurer, and Dr. P. L. Sclater, F.R.S., Secretary to the Society for the ensuing year. The following were elected into the Council, in the place of retiring members:—Dr. John Anderson, F.R.S., Mr. Herbert Druce, Sir Joseph Fayrer, F.R.S., Major Henry P. St. John Mildmay, and Prof. A. Newton, F.R.S.

THE opening meeting of the British Association this year will take place on Wednesday, August 8, when Prof. Burdon Sanderson, F.R.S., will resign the chair, and the Marquis of Salisbury will assume the presidency and deliver an address. On Thursday, August 9, a soirée will be held. On August 10, a discourse will be delivered by Dr. W. H. White, C.B., F.R.S., on "Steam Navigation at High Speeds"; on August 13, Prof. J. S. Nicholson will lecture on "Historical Progress and Ideal Socialism"; on August 14 there will be another soirée, and the concluding meeting will be held on Wednesday, August 15.

THE committee for the establishment of a station at Cumbræ, for the study of marine zoology and botany, are making good progress with their arrangements. The *Ark* has now been put into order for the summer months, and the services of an experienced keeper secured. Mr. David Robertson, the well-known "naturalist of Cumbræ," takes a warm interest in the scheme, and is giving it his personal supervision. A number of students have intimated their intention of availing themselves of the facilities for research thus provided. A considerable sum has been subscribed for the erection of a permanent building, and also for the annual expenses of the station—about half of what is required in each case; and the committee have good hopes that the remaining half will soon be obtained.

THE Geologists' Association have arranged an excursion to Oxted and Titsey for Saturday next, under the direction of Mr. G. Leveson Gower and Mr. W. Topley, F.R.S. The district is not only interesting geologically, but contains a number of archæological remains. During Whitsuntide a long excursion has been arranged to Cambridge and Ely, and on May 26 Mr. John Hopkinson and Mr. Worthington G. Smith will conduct a party to Luton, Caddington, and Dunstable. In the neighbourhood of Caddington are numerous pits in Drift (brick-earth, &c.), and Tertiary remanié beds, worked for clay and sand for brick-making, and for gravel. In these pits Mr. Smith discovered an old Palæolithic land-surface on Tertiary remanié, surmounted by re-laid Tertiary clay, and contorted, implementiferous red plateau drift. On this Palæolithic floor flint flakes of all kinds occur in hundreds, nearly all as keen-edged as knives. That these flakes were made on the spot is shown by the fragments found, which have been struck off, and in many instances have been replaced in their original position, the flint being thus rebuilt. A large Saxon tumulus is also to be seen at Caddington. Close to Zouches Farm is an old pasture, believed to have been a place for making bricks or tiles in mediæval or, perhaps, Roman times; and near Blows Downs is a group of early British hut-foundations. From this it will be seen that the excursion will be one of unusual interest.

Two lectures on "The Æther and its Relations to Material Phenomena" will be delivered at Gresham College, Basinghall Street, on the evenings of May 8 and 9, by Dr. J. Larmor, F.R.S. Prof. Karl Pearson will deliver two final lectures on "The Geometry of Chance," on May 9 and 10.

For misleading statements, and the suppression of facts, commend us to the opponents of Pasteur's anti-rabic treatment. If the general public are gulled into believing half of what it sees posted on the public hoardings concerning the results of the treatment at the Pasteur Institute in Paris, it must liken the eminent head to a veritable Frankenstein. In our issue of April 19 we noted a few of the facts from the official report contained in the current number of the *Annales de l'Institut Pasteur*. This brought us a letter from Mr. F. E. Pirkis, accompanied by a black-edged document, published by the Victoria Street Society for the Protection of Animals from Vivisection, and headed "M. Pasteur's Double Hecatomb. The Tale of the 257 Dead. (New Edition. Revised to November 20, 1893.)" In our note we recorded that only 72 deaths had occurred amongst the Institute patients since the commencement of the inoculations in 1886. But this fact does not tally with the misrepresentations widely advertised by the anti-vivisectionists; so Mr. Pirkis essays to put us right. In reply to his remarks, we would first point out that the note in question simply gives a summary of the published statistics without any critical commentary thereon. This summary, however, clearly indicates that only those deaths which take place *after* the lapse of fifteen days from the date of the last inoculation are included as having occurred *in spite* of the treatment. Our correspondent has apparently not understood this part of the statement, otherwise he would not express surprise at the discrepancy between the 72 deaths given in the statistical report and the 195 deaths which is the total alleged in "M. Pasteur's Double Hecatomb" to have taken place amongst all-comers to the Pasteur Institute. Further, he contrasts the 72 deaths mentioned in the note in Nature with 257 deaths given in the anti-Pasteur circular; but he has apparently not noticed that only 195 of the latter are alleged to have been treated at the Paris Pasteur Institute. A superficial glance at the black-edged document at once shows that many of the deaths there recorded took place *within* fifteen days of the last inoculation, and would, therefore, certainly be excluded from the official statistics of the Pasteur Institute, for the reasons already given. Assuming the total of 195 deaths to be correct, and there are no grounds for impugning the accuracy of the figure, and taking the total number of persons inoculated at the Paris Institute as 14,553—a figure obtained by adding to 14,430, which is the total number of those inoculated at Paris *given* in the official statistics, the number 123, which assuming the correctness of the figures in the anti-Pasteur document represents the number of those patients who were excluded from the official statistics, owing to their death having taken place *within* fifteen days of the last inoculation—it appears that the *total mortality* amongst all the inoculated is only 1·3 per cent. The mortality amongst persons bitten by rabid dogs, and not submitted to treatment, is commonly accepted to be from 15–20 per cent. If the agitators against the establishment of Pasteur Institutes would only look such facts as these in the face, there might be more hope that they would be led to see the error of their ways.

After the close of the recent Medical Congress at Rome, many of the members took part in various excursions organised for their recreation and instruction. It was during an excursion to the Island of Capri that Prof. Todaro related the following interesting story, which we take from the *Lancet*. Early in this century the riches of the Gulf of Naples for naturalists came to be appreciated by local investigators, and their reports attracted the special notice of Cuvier, from whom the reported riches were communicated, always with fresh increment, through Milne Edwards to Quatrefuges. Another and still mightier name to be attracted to the Gulf was Johann von Müller of Berlin, the most encyclopædic of biologists, who, long interested in the inferior vertebrata, had written a classical monograph on them. A contemporary of his, Oronzio Costa of Naples, an investigator of rare powers, had discovered in these waters the *amphioxus*, already known to British and Russian naturalists as the *Branchiostoma lanceolatum*. Costa recognised its true nature, and described it as the first and lowest of the vertebrata. His description at once engrossed von Müller's attention, insomuch that he had barely read it when he said to his wife, "My dear, you must come with me to the Bay of Naples." Travelling in those days was effected by diligence, and it was not till after some weeks that the great German biologist and his lady reached the bay. Alighting at the Albergo di Roma at Santa Lucia, he sent at once for a mariner to get him a specimen of the *amphioxus*. This man turned out to be Costa's own mariner, Giovanni by name, who forthwith in the grey morning, as the result of a "miraculous draught" under Posillipo, obtained the animal and brought it to von Müller, who was still in bed. Overjoyed with his possession, von Müller put it at once into alcohol, woke his wife, who, tired with the long journey, was sleeping profoundly, and said, "My dear, get up immediately, we are going back to Berlin." Von Müller's enthusiasm was caught up by his compatriot Krohn, who from his sojourn at Messina in 1844 drew his German friends to those waters, till year by year, each spring and autumn, the Teutonic universities sent relays of young naturalists to that seaboard—among them Anton Dohrn—a most accomplished student of nature, to whom we owe the scientific institute founded at Naples and opened in 1873. Since that year the Stazione Zoologica has become more and more the resort of biologists, and now there is hardly a seat of learning in Europe which does not contribute to its maintenance in return for facilities afforded to the student for prosecuting research.

The Italian Meteorological Office has succeeded, after some difficulty, in establishing a fairly satisfactory thermometrical station on Mount Etna, at an altitude of about 9850 feet, by means of a recording instrument made by Richard, of Paris, which goes for 40 days. By this method 207 days' observations were secured in the year 1893, and direct observations were also made on 72 days. During seven months of the year the mean temperature was below the freezing point. The maximum temperature observed was 60°·8 in September, and the minimum 13°·5 in March. The characteristic of the annual variation is that the low temperatures are prolonged until June, and, in the autumn, the mild temperatures extend up to December.

An important contribution to the meteorology of South-eastern Europe has been made by the publication of the means of observations for Sophia (Bulgaria) for the years 1891–3, for three hours each day, and for the month and year. During this period the extreme temperatures have varied between −24°·2 in January 1893 and 97°·7 in August 1891. The mean annual rainfall was 31·2 inches, and the greatest daily fall 2·76 inches, in September 1891. The mean annual relative humidity was 74·1 per cent. At the meteorological conference at Munich, in 1891, the wish was expressed for observations (especially telegraphic reports) from Bulgaria, and the publication of these results by Prof. Watsoff, director of the Central Meteorological Station at Sophia, is a good step in the right direction.

In a letter to the local press, Mr. H. C. Russell, F.R.S., the Director of the Sydney Observatory, recently brought together some facts concerning icebergs and their relation to weather. The letter was written with the view of showing that the icebergs seen near Australia do not influence the weather in the manner commonly supposed. All the reports of icebergs seen within the last two years or so, were collected, and it was found that they numbered eighty-four. In order to locate these icebergs, the position of each ship when ice was seen, was plotted on a map of the world. Of the eighty-four positions thus marked on the map, sixty-one, or 73 per cent., were under the lee of Patagonia, as if they had been carried there by the strong winds and the Cape Horn current, which sets northwards after passing Cape Horn. Round the Cape of Good Hope was another, though less numerous, group of positions, numbering thirteen, and making 90 per cent. of the whole collected in the two localities. About the Crozets two ships reported ice, and two ships reported seeing ice on the same day and in the same longitude at a point 500 miles south-west from Albany. Six other locations were between New Zealand and Cape Horn. Of the eighty-four ships reporting, only two saw ice anywhere near Australia, and that was more than two years ago, on December 14, 1891. As to the effect of icebergs in lowering the temperature, Mr. Russell points out that many observers have reported that the thermometer is not a good indicator of the proximity of ice, no matter whether it is placed in air or in the sea; and this is not surprising if it be remembered that fresh supplies of ocean water and wind are always flowing past the icebergs, and distributing their cold over such wide areas that it becomes inappreciable. Even under the lee of Patagonia, where, in a sense, the ocean is full of icebergs for an area measured by hundreds of miles each way, it does not appear that any very remarkable effect on the temperature is produced, and near Australia, where now and then a few scattered icebergs are seen in the distant offing, no appreciable effect can result from their presence.

At a recent meeting of the Academy of Sciences of St. Petersburg, Dr. S. Wild read an interesting paper on some improvements in the design and construction of magnetic instruments. The paper is divided into four parts, the first containing the results of some experiments which show that metallic wires are preferable to the silk threads usually employed for the suspension of the magnets in magnetographs. The second part deals with the question of the accuracy of the readings given by the instruments employed to record the variations in the magnetic elements, when these instruments are contained in buildings composed of a material (such as ordinary red brick) containing iron. The experiments on this subject, commenced in 1878, have been continued, and show very clearly that a brick building has no influence on the measurements of the strength of the field, while the influence on the dip is quite negligible. The above result has also been deduced theoretically by M. Chwolson by means of the known value of the susceptibility of the bricks. The third part of the paper contains a description of a small magnetometer for determining the value of the horizontal component of the earth's magnetism, designed for the use of travellers in countries where it would be difficult to carry the ordinary instruments. The instrument fits on Hildebrandt's small universal theodolite, which instrument is fitted with a compass. The combined instrument, although of small weight, is capable of giving results of considerable precision. Thus the dip can be determined to within half a minute of arc, and the horizontal component to within one part in four thousand. Lastly, the paper contains a description of some changes which Dr. Wild has introduced into the portable magnetometer.

In the April number of the *Journal de Physique*, M. H. Abraham gives an account of a method for measuring self and mutual induction, which he says is capable of giving the quantity which is being measured to within one part in a thousand. The method employed consists essentially of balancing a steady current passing through one pair of coils of a differential galvanometer against a succession of induced currents sent, by means of a commutator rotating at a known speed, through the other coils. The commutator then being stopped, the secondary circuit, containing one pair of coils of the galvanometer, is connected with the extremities of a resistance r in the primary circuit. The value of r is altered till the galvanometer is undeflected, then, from a knowledge of the value of r and the speed of rotation of the commutator, the value of the mutual induction can be calculated. In many ways the method resembles that employed by Profs. Ayrton and Perry in their secohm-meter.

The line spectrum of oxygen has recently found another careful investigator in Max Eisig, who gives an account of his work in *Wiedemann's Annalen*. The wave-lengths photographed and measured ranged from 2433·6 to 4710·4. The oxygen was generated by the electrolysis of water acidulated with pure phosphoric acid. The form of vacuum tube adopted was that consisting of two vessels joined by a thin tube at right angles to their length, which allowed the gas to be seen through the length of the tube. The end was closed by a plate of quartz to permit the passage of the ultra-violet rays. The tube was cleaned by flushing it with oxygen for several weeks. Of the four different oxygen spectra described by Schuster, only the elementary line spectrum was studied; 93 lines were recorded and measured. A comparison of these lines with a Rowland solar spectrum led to the conclusion that no identity between these oxygen lines and lines in the solar spectrum can be established.

Prof. Julius Thomsen, universally known from his researches in thermo-chemistry, has just finished a series of observations on the ratio of the atomic weights of hydrogen and oxygen (*Zeit. für phys. Chem.* xiii. 398). In order to avoid the errors incidental to the direct methods of estimating the ratio, he employs an indirect method, which consists in estimating the ratio of the molecular weights of hydrogen chloride and ammonia. Pure hydrogen chloride is passed into a flask containing water, and the increase in weight is determined. Pure dry ammonia is then introduced into the solution until the hydrochloric acid is neutralised, and the weight again determined. After introducing all corrections, a large number of observations, in which the initial amount of hydrogen chloride varied between 4 and 20 gr. indicate that the value for the ratio, HCl/NH_3 is 2·13934 ± 0·00009. This number leads to the result that 1 : 16 represents the value of the ratio H : O with an accuracy as great as is warranted by the numbers in use for the atomic weights of chlorine and nitrogen, and which have of course to be employed in the calculation. Dumas and Erdmann and Marchand, from the synthesis of water from copper oxide and hydrogen, found respectively 1·0025 : 16 and 1·0017 : 16 as values of the ratio, and more recently Scott, from the volume composition of water, gives the higher value 1·0087 : 16.

In a recent number of the *Centralblatt für Allgem. Pathologie* some exceedingly interesting experiments are recorded on immunity from the attacks of cholera germs artificially induced in the human subject. Drs. Sawtschenko and Sobolotny succeeded in preparing a vaccine from cultures of the cholera bacillus which so profoundly modified the system, that when they subsequently swallowed virulent cholera germs they experienced absolutely no evil effects whatever. But perhaps the most interesting results obtained, and which proved in a very remarkable manner the modification induced in the system by this vaccine, was the transmission of this induced immunity by means of blood serum to animals. Thus, twenty-five days after the last dose of vaccine had been taken, Sawtschenko and Sobolotny introduced some of their serum into guinea-pigs, and the latter were afterwards inoculated with virulent cholera bacilli. Instead, however, of these animals dying, as they usually do when treated with cholera bacilli, they remained alive. It was found that 0·01 g. of this human serum was sufficient to protect one of these animals subsequently treated with 0·006 g. of virulent cholera bacilli.

An inquiry into the pollution of the River Danube by the drainage from Vienna was carried out last year by Dr. Heider (*Das Österr-Sanitätswesen*, 1893, No. 31). This river reaches Vienna in a satisfactory condition, containing about 2000 bacteria per cubic centimetre. The Danube canal on its way through the city receives the greater part of its sewage, resulting, as was to be expected, in an enormous accession of bacteria, 21,000—120,000 per c.c. being present. On uniting with the main-stream and becoming mixed with about seven times the volume of water, the pollution is chemically hardly discoverable. Bacteriologically, however, even 40 kilometres below the entrance of the canal, the contamination is still very easily perceptible, the rapidity of the current and the constant disturbance of the water by steam-boat traffic interfering with the efficient sedimentation of the bacteria present. Dr. Heider states that though the existence of disease germs in the water may be interfered with by the severe competition they would have to endure with the numerous harmless microbes, yet the vitality of, for example, cholera bacilli in river water has been shown to persist for several days, and in sewage for very considerable periods of time, so that too much reliance cannot be placed upon the efficiency of this factor. The action of light in destroying disease germs in the river, should they be present, is also discounted. Those who so ardently uphold the comfortable doctrine of the self-purification of rivers, permitting, as it does, of so inexpensive and ready a method of getting rid of sewage by turning it, without let or hindrance, into our streams, will gain but little support for their theories from Dr. Heider's report.

In the April number of the *Journal of Anatomy and Physiology*, Prof. R. Havelock Charles concludes an article on morphological peculiarities in natives of the Panjab, and their bearing on the question of the transmission of acquired characters. He shows that the bones of the lower extremity of the Panjabi adult have certain markings differentiating them from those of Europeans. Though these markings are found on the bones of the fœtus, the infant, and the child of the Panjabi, they are not found in the skeleton of either the European adult or child. Some of them have been found in the remains of Neolithic man in Europe, but are absent in the bones of peoples of the present day of similar geographical distribution. According to Prof. Charles, the explanation of this lies in the fact that the habits as to sitting postures of Europeans differ from those of their prehistoric ancestors, the cave-dwellers, &c., who probably squatted on the ground. The Orientals, however, have retained the sitting postures of their ancestors, and therefore exhibit similar markings. "Want of use," concludes Prof. Charles, "would induce changes in form and size, and so gradually small differences would be integrated till there would be total disappearance of the markings on the European skeleton, as no advantage would accrue to him from the possession of facets on his bones fitting them for postures not practised by him. The facets seen on the bones of the Panjabi infant or fœtus have been transmitted to it by the accumulation of peculiarities gained by habit in the evolution of its racial type—in which an acquisition having become a permanent possession 'profitable to the individual under its conditions of life' is transmitted as a useful inheritance. These markings are due to the influence of certain positions, which are brought about by the use of groups of muscles, and they are the definite results produced by actions of these muscles. . . . They are instances of the transmission of acquired character, which heritage in the individual function subsequently develops."

There are many evidences that a portion of the east coast of Florida was thickly populated in prehistoric times, and remains of this settlement are found in refuse heaps of villages and single habitations. These heaps are from a few square yards to many acres in extent, and from one to fifteen feet in depth. Some of their contents are described and figured by Dr. De Witt Webb, in an excerpt from the *Proceedings* of the U.S. National Museum (vol. xvi. No. 966). In connection with the remains, various members of the human skeleton have been found in positions which suggest cannibalism. There are hearths with accumulations of ashes and shells mingled with pottery (mostly in fragments) and implements and weapons of shell, all of which tell something of the mode of life of the race which apparently inhabited the region for many generations. As to the age of the heaps, Dr. Webb concludes it must be left to conjecture. Trees hundreds of years old are scattered over the remains, all instruments and implements of wood have long since perished, and not even a tradition is left to throw light upon the matter.

A second edition of "A Manual of Ethics" designed for the use of students, by Mr. John S. Mackenzie, has been published by the University Correspondence College Press.

Messrs. Cassell and Co. have commenced a new serial issue, in monthly parts, of Mr. W. Swaysland's "Familiar Wild Birds." In Part i. the Goldfinch and the Magpie are described and pictured. The descriptions, though brief, are very instructive, and the plates are extremely good.

In addition to the usual excellent summary of current researches, the *Journal of the Royal Microscopical Society* for April contains the fifth part of Mr. F. Chapman's paper on the foraminifera of the gault of Folkestone; a description of an inexpensive screen for monochromatic light, by Mr. J. W. Gifford; and an account of a gall-producing Copepod, *Fucitrogus Rhodymeniæ*, sp. n., by Dr. G. S. Brady, F.R.S.

The long-expected work on the Carboniferous Insects of Commentry, France, upon which M. Charles Brongniart, of the Paris Natural History Museum, has been engaged some fifteen years, is now finished, and will appear in a few weeks. It forms a volume of 450 pages in quarto and an atlas of thirty-seven plates in folio. About 60 new genera and 100 new species are described. The work also contains a detailed study of the nervation of living *Neuroptera*, *Orthoptera*, and *Fulgoridæ*.

A pamphlet, entitled "Notes on Birds of Central Mexico, with Descriptions of Forms believed to be New," by Mr. P. L. Jouy, has been issued as an excerpt from the *Proceedings* of the U.S. National Museum (vol. xvi. pp. 771–791). Most of the species enumerated are from the temperate table-land region corresponding to the southern borders of Arizona and New Mexico, and though few common tropical birds are given, the list will certainly be found valuable.

A propos of the early return of birds this year, Mr. J. H. Barbour, writing from Ballyholme, Ireland, says that on Saturday, April 28, about 10 p.m., he heard the corncrake several times, and it was heard in the district a fortnight before.

A LETTER has been received in reply to the one on "The Mass of the Earth," which appeared in our issue of April 19 (p. 575), but it was not accompanied by the author's name. If the author will send his name, the Editor will be glad to print his reply to "K."

DR. JENTINK, the Director of the Leyden Museum, reminds us that two specimens of *Rhinoceros simus* have formed part of the Museum collection for more than forty years, one of them being a remarkably fine animal. These are described in *Notes from the Leyden Museum* (1890, pp. 241–245), and we regret that they were not mentioned in the note on the two specimens recently modelled by Mr. Rowland Ward, printed in NATURE of April 19 (p. 584).

WE know of no collection of text-books in which the theory underlying industrial machines and processes is set forth in a more scientific and thorough manner than it is in the works of the Encyclopédie Scientifique des Aide-Mémoire series, edited by M. Léauté, and published by Gauthier Villars, and by Masson. Two of these volumes, which have recently appeared, deal with freezing machines, one being devoted to the machines depending upon easily liquefiable gases, and the other to machines in which air, or one of the so-called permanent gases, is caused to expand rapidly, and thus bring about a decrease of temperature. The titles of the two books are, respectively, "Machines Frigorifiques a Gaz Liquéfiables" and "Machines Frigorifiques a Air," and their author is M. R. E. de Marchena. Another volume, just added to the series, is "Construction and Resistance des Machines a Vapeur," by M. Alheilig.

WE have received the sixteenth yearly volume of *Aus dem Archiv der Deutschen Seewarte*, 1893, containing seven important discussions in meteorology and terrestrial magnetism. The current number of this valuable publication inaugurates a new departure, as a considerable amount of routine matter has been removed to another periodical, in order to make room for scientific discussions, and to allow of the work being brought out with less delay than heretofore. It is not practicable to mention here the whole of the subjects dealt with: among the most original investigations not already referred to in our columns are papers by Dr. C. Kassner on "Circular Cyclones," and by Dr. W. Köppen and Dr. H. Meyer, on the frequency of the various amounts of cloud as a climatological element. This last paper embraces the results of a number of long series of cloud observations in different parts of the globe, and a part of the North Atlantic Ocean.

IN general, a work which has reached a seventh edition needs no better testimony of its good qualities than that to be found in the fact of its survival. This is the case with Sir David Salomon's "Electric Light Installations and the Management of Accumulators," which is being issued by Messrs. Whittaker and Co. The edition has been mostly rewritten, and will be completed in three volumes. The first volume appeared a short time ago, and was confined entirely to the treatment of accumulators. Vol. ii., which has just been issued, deals with engines, dynamos and motors, and numberless pieces of apparatus concerned in the generation and utilisation of electricity. Special applications of such apparatus are reserved for description in vol. iii., now in the press. In the three hundred pages of which the second volume consists, as many as 296 illustrations are crowded; but as the author has confined himself to the representation of typical forms of instruments, he has saved the book from being merely an illustrated trade catalogue.

THE Cambridge University Press will shortly publish a treatise on the "Steam Engine and other Heat Engines," by Prof. Ewing; the seventh volume of the edition of Prof. Cayley's collected papers, and the first volume of the collected papers of the late Prof. Adams. An "Elementary Treatise on Electricity and Magnetism," by Prof. J. J. Thomson, is in the press, and also a new edition of Prof. Lamb's "Hydrodynamics," largely rewritten and extended. An "Elementary Treatise on Hydrostatics," by Mr. John Greaves, has just appeared, and a Key to Mr. C. Smith's "Arithmetic" is nearly ready. The completion of Mr. H. M. Taylor's "Euclid" is also announced, and will be published in August. The second volume of Dr. Creighton's "History of Epidemics" may be expected shortly, and a new volume of the Royal Society's Catalogue. In the series of Cambridge Natural Science Manuals, Mr. Glazebrook's volumes on "Light" and "Heat," recently published, will be followed by volumes by the same writer on "Mechanics and Hydrostatics," and on "Electricity and Magnetism," and by Messrs. Darwin and Acton's "Physiology of Plants."

DR. J. P. VAN DER STOK, the Director of the Batavia Meteorological Observatory, has sent us a report of the rainfall observations made in the East Indian Archipelago during 1892. This "Regenwaarnemingen in Nederlandsch-Indie" has now reached its sixteenth year. From it we learn that observations were made in 192 stations during 1892, of which 104 were in Java and Madœra, and 88 in Sumatra and other islands in the Archipelago. In addition to the volume of rainfall observations, the Government of Netherlands India has published one containing the observations made at the magnetic and meteorological observatory at Batavia during 1892, being the fifteenth volume of the "Observations" of the Observatory. No science can claim so many disciples as meteorology. There is scarcely a corner of the world, inhabited by civilised man, in which the temperature is not recorded and the rainfall measured. Indeed, the thermometer and the rain-gauge are the instruments by means of which the first continuous scientific observations are made in most parts of our globe. Meteorological observations, therefore, rapidly accumulate, and the volumes containing them have almost become unmanageable, both as regards number and size. One is sometimes tempted to ask whether these masses of statistics are worth publication, but the remembrance of past discoveries—such, for instance, as Schwabe's discovery of the solar cycle from his daily records of the state of the sun's surface during a quarter of a century—shows the importance of recording all observations that good may come from them.

A FURTHER paper by M. Lobry de Bruyn, of Amsterdam, upon the subject of free hydroxylamine, is contributed to the current issue of the *Berichte*. It contains an account of a number of experiments upon the stability of the isolated base, together with additional observations upon the mode of preparation. When M. de Bruyn prepared his large quantity of solid hydroxylamine three years ago, several small quantities, amounting to five or six grams in each case, were sealed up in small bottles previously cleansed with acid, and preserved in a dark room. Upon recently examining the contents, they were found to be mostly liquid, indicating a certain amount of decomposition. The melting point of pure hydroxylamine is 33°; two of the liquefied specimens referred to solidified again at 28°·5 and 25°·2 respectively. The amount of decomposition, however, is not very great, three of the specimens being found to contain 93, 84, and 73 per cent. respectively. Hence free hydroxylamine appears to be a tolerably stable substance at ordinary low temperatures, but the stability diminishes rapidly with rise of temperature. The decomposition is accompanied by the liberation of bubbles of nitrogen and nitrous oxide. The change appears to be one of self-oxidation and reduction, one portion eliminating oxygen and forming ammonia, and another part suffering oxidation to nitrous and hyponitrous acids, which combine or react with the ammonia and a further quantity of hydroxylamine. As hydroxylamine nitrite spontaneously decomposes, as M. de Bruyn has shown by experiment, it is probable that the hyponitrite of the base is incapable of existence; hence the liberation of nitrogen and nitrous oxide is fully accounted for. M. de Bruyn states that in preparing large quantities of the solid base by fractional distillation of the methyl alcohol solution under diminished pressure it is preferable, after distilling off the methyl alcohol, to divide the residue rich in hydroxylamine among several distilling flasks, and to thus complete the fractionation in small portions. For it is a somewhat remarkable fact that the yield is very much larger when the distillation occurs in this manner; it would appear that the amount of decomposition considerably increases with the bulk of liquid distilled. Moreover, the risk of explosion upon temporarily arresting the distillation in order to change the receiver, is greater with larger quantities, but usually an explosion may be prevented by immersing the distilling flask in cold water during the rapid change of receivers. Taking this precaution, M. de Bruyn has safely distilled as much as half a kilogram of the pure base.

ERRATUM.—In NATURE of April 26 (p. 603), and on the tenth line from the bottom of the first column, for "mosses" substitute "mirses."

THE additions to the Zoological Society's Gardens during the past week include two Macaque Monkeys (*Macacus cynomolgus*) from India, presented respectively by Mr. C. Palmer and Miss A. Orvis; two —— Jackals (*Canis variegatus*), two Fennec Foxes (*Canis cerdo*), two Pale Fennec Foxes (*Canis pallidus*), a Syrian Fennec Fox (*Canis famelicus*), an Egyptian Cat (*Felis chaus*), a —— Genet (*Genetta*, sp. inc.), a —— Zorilla (*Ictonyx frenata*), a Crested Porcupine (*Hystrix cristata*), two —— Gerbilles (*Gerbillus*, sp. inc.), two Lesser Egyptian Gerbilles (*Gerbillus ægyptius*), three Spiny Mice (*Acomys*, sp. inc.), six —— Uromastix (*Uromastix ornatus*) from Suakin, a Libyan Zorilla (*Ictonyx lybica*), two Dwarf Jerboas (*Dipodillus*, sp. inc.), four Spiny Mice (*Acomys*, sp. inc.), three —— Hedgehogs (*Erinaceus auritus*), two Egyptian Jerboas (*Dipus ægyptius*) from Egypt, presented by Dr. John Anderson, F.R.S.; a Wattled Crane (*Grus carunculata*), two Cape Crowned Cranes (*Balearica chrysopelargus*) from South Africa, presented by Sir H. B. Loch, G.C.B., G.C.M.G.; a Grey Ichneumon (*Herpestes griseus*) from India, presented by Mr. John Penn, M.P.; two Robben Island Snakes (*Coronella phocarum*) from South Africa, presented by Mr. Barry McMillan; an Indian Civet (*Viverricula malaccensis*) from India, a long-Legged Buzzard (*Buteo ferox*) captured in the Red Sea, a Mexican Deer (*Cariacus mexicanus*) from Mexico, deposited; four Red-headed Pochards (*Fuligula ferina*), European, purchased.

OUR ASTRONOMICAL COLUMN.

AN ASTRONOMICAL EXPEDITION FROM HARVARD.—A party, in charge of Prof. W. H. Pickering, will soon set out from Harvard College Observatory (says *Astronomy and Astro-Physics*) to establish an observing station somewhere in the State of Arizona, the principal object of the expedition being to observe Mars during the favourable opposition this year. The chief instrument to be conveyed to the site chosen is an eighteen-inch refractor by Brashear, the objective of which was exhibited at the Chicago Exposition. Mr. Percival Lowell, of Boston, who has generously provided the funds for the expedition, will accompany it as an observer.

ELEMENTS AND EPHEMERIS OF GALE'S COMET.—*Edinburgh Circular*, No. 42, contains the subjoined ephemeris for Gale's comet, computed by Mr. A. J. Ramsay.

Ephemeris for Greenwich Midnight.

1894.	R.A. h. m. s.	Decl. ° ′	Brightness.
May 3	8 17 17	7 20·6	
4	8 28 4	S. 3 26·6	5·42
5	8 38 18	N. 0 16·6	
6	8 48 1	3 47·4	
7	8 57 10	7 3·7	
8	9 5 49	10 5·7	3·97
9	9 13 59	12 52·7	
10	9 21 42	15 25·6	
11	9 28 57	17 45·4	
12	9 35 52	19 52 7	2·70
13	9 42 22	21 48·2	
14	9 48 28	23 33·3	
15	9 54 16	N. 25 10·7	2·00

The brightness at the time of discovery has been taken as unity.

THE HATCHERY FOR SEA FISHES, OF THE FISHERY BOARD FOR SCOTLAND AT DUNBAR.

IN recent years, owing to over-fishing, the scarcity of certain important marine food-fishes has become manifest in many countries, and as one way of meeting the constant drain on the fishing grounds, sea-fish hatcheries have been established in the United States, Newfoundland, Canada, and Norway. A year or two ago the Fishery Board for Scotland began the erection of a similar establishment at Dunbar, which has lately been completed; and for the last five or six weeks active operations have been going on in hatching plaice, with complete success, under the charge of Mr. Harald Dannevig, a Norwegian expert, whose services have been obtained by the Fishery Board. The hatchery consists of (1) a tidal pond; (2) a large "spawning" tank; (3) a chamber for the collection of the eggs and for filtering the water; and (4) the house in which the hatching apparatus is placed. The spawning fishes, male and female, number about 350, and are confined in the large elevated spawning tank (made of concrete) through which a constant current of sea water is maintained. They range from about 14 to 27 inches in length, and are vigorous and feed well. In this tank, which has a capacity of over 60,000 gallons, the fishes spawn naturally, just as they would in the sea; and as the eggs are buoyant they rise to the surface, or near it, and are collected in hundreds of thousands at a time in a specially constructed apparatus placed at the point where the overflow from the tank occurs. The fertilised eggs, which are among the largest of the pelagic forms, are then transferred to the apparatus in the hatching room, through which a continuous circulation of pure sea water is kept up. The hatching takes nearly three weeks to accomplish, and the little fishes are retained for some time after hatching until the yolk is almost absorbed. In smaller vessels with a higher temperature, hatching occurs more rapidly, but the period named (three weeks), probably approaches the normal period in the sea. The number of plaice eggs and larvæ at present in the hatching boxes is 8,500,000, and over 7,700,000 fry have been already put in the Firth of Forth by the s.s. *Garland*. The supply of sea water required is considerable, and is obtained by means of two double-acting steam pumps, capable of throwing over 7000 gallons an hour, and driven by an 8 h.p. locomotive boiler. Before being conducted to the hatching apparatus, the water passes through a series of flannel filters, but from its purity when it comes from the sea the filtration gives little trouble. Strong evidence of the suitability of the water for the purpose, and of the satisfactory working of the arrangements, is afforded by the very low death-rate, that is to say, the proportion of eggs which succumb in the process of hatching. At Dunbar it has not exceeded 4 per cent.—a much lower death-rate, so far as known, than at any other marine hatchery. At the Newfoundland hatchery the death-rate has varied from about 37 per cent. to nearly 50 per cent. in different years;